

2006 Mumps Epidemic: The Iowa Perspective on Isolation and Quarantine

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2008 Conference



Objectives

- Describe the implications of a large outbreak in a college-age population
- Detail the Iowa experience in the largest mumps outbreak in the U.S. in 20 years
- Outline the assessment process for isolation and quarantine
- Discuss utilization of isolation and quarantine in outbreaks of mild illness



Floods of 2008



Parkersburg: One Month After the Tornado

By Claire Kellett

PARKERSBURG - One month ago Wednesday, a total of six tornadoes tore through Parkersburg, New Hartford, Dunkerton and Hazleton. It was an EF-5 tornado that leveled hundreds of homes in the Butler County town of Parkersburg. People there say they are proud of the progress in Parkersburg.



The New York Times

Mumps Epidemic Spreads; More Vaccine Promised

IOWA CITY, April 19 — In the largest mumps outbreak in the United States in more than 20 years, almost 1,000 people have contracted the disease in the Midwest, the [Centers for Disease Control and Prevention](#) in Atlanta announced Wednesday.

Map: Mumps Outbreak

The epidemic began in Iowa, where the State Department of Public Health has reported 815 suspected or confirmed cases. It has spread to at least seven other states.



Fall/Winter 2005

- Cluster of cases reported in an Eastern Iowa college in December
- Initially attributed to other causes
- Two IgM+ results



January

- Additional 7-8 cases
- Continued to monitor though few commonalities
 - Most were college age but not same colleges
- Mumps virus isolated in 2 cases



February

- Surveillance revealed an additional 10 cases
 - Three colleges affected in 3 counties
- Some colleges and institutions had a 2-dose Measles, Mumps and Rubella (MMR) vaccine requirement
- Record keeping to assess vaccine coverage
- Student health services were primary care providers



Surveillance

- Students ill with mumps-like symptoms sought treatment
- Health care providers assessed for mumps (many were seen in student health clinics)
- County or state health departments were notified
- County health departments conducted student interviews
- Initiated active surveillance in 5 counties with large universities



Advice to Students

- Told to stay home or in dormitory when ill
- Encouraged to be vaccinated if the student had fewer than 2 doses
- Told to not share saliva
- Email and websites used most often



March

- Cases started to increase significantly in part to increased awareness
- Education for spring break behavior widely disseminated



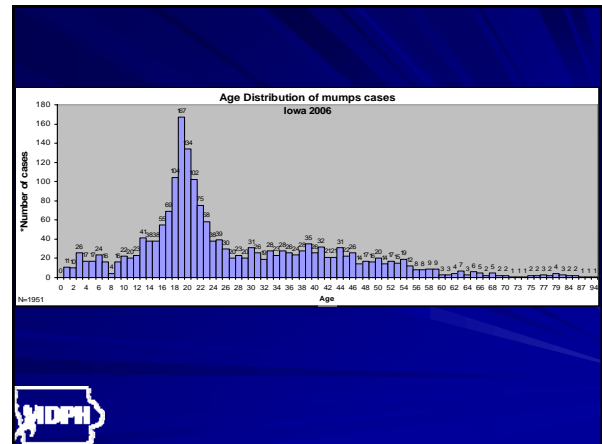
Demographic Profile

Number of confirmed cases	1643
Number of probable cases	315
Total	1958
Number of completed follow-up reports that are cases	1798
Median age at onset	22
% cases currently enrolled in college	25%*
0 MMR	7% (123/1798)
1 MMR	14% (245/1798)
≥ 2 MMR	49% (884/1798)
Unknown	30% (546/1798)
% with any history of MMR	63%
Average duration of symptoms	4 days
Epi-linked	13% (255/1957†)

*Of all initial and follow-up reports where college status is available. College status is not available for all initial reports.
 † Of all initial and follow-up reports where epi-linked to a confirmed or probable case was indicated.

Clinical Profile

Symptom distribution	% Affected
Parotitis	69% (1231/1798)
Fever	35% (627/1798)
Sub/max swelling	49% (884/1798)
Sore throat	52% (940/1798)
Headache	34% (612/1798)
Cough	14% (247/1798)
Orchitis	8% (42/585†)
Encephalitis	0.002% (4/1798)



Iowa Public Health System

- Very decentralized; 99 county boards of health
 - 99 counties and 2 city health departments
- Each county has ability to issue isolate and/or quarantine orders
 - Adopted ordinances within the past three years

How is Quarantine or Isolation Put in Place?

- The law on quarantine and isolation is found in Section 139A of the Code of Iowa.
- Most procedures are outlined in the Iowa Administrative Code, 641-1.9, Chapters 1 through 10.
- Model rules are found in Iowa Administrative Code, 641- 1.12

Quarantine and Isolation Partnerships

- Local health departments usually work with the IDPH to decide on need for and details of isolation or quarantine.
- The local board of health will need to issue a quarantine or isolation order.
- Local Law enforcement may be needed to enforce quarantine or isolation.
- More than one county may be involved.

I & Q Discussion

- Examined literature- three key studies
 - Outdated
 - Only one examined evidence of ability to culture virus past 5 days
- Consideration of severity of illness
- Characterized target population
- Compliance
- Experience in other states



Outcome

- Isolation for physician-diagnosed mumps cases for **5 days or until symptoms resolved**
- Special situations
 - College dorms
 - Multi-resident apartments
 - Health care professionals



Quarantine Discussion

- Cost-benefit
 - Cost of enforcement verses benefit of reducing spread of disease
- Identification of contacts
 - 20% of cases have no symptoms
- Characterization of disease
 - Mild and many
- Characterization of population at risk
 - Many vaccinated



Quarantine Efforts

- Education initiatives- *Students*
 - Spring Break
 - Parties
 - Athletic events
- Employer-enforced quarantine- *Health professionals*
 - Unvaccinated, contact with known case



Interventions

- Three-phase targeted vaccination strategy
 - Targeted college-age population
 - Stockpiled vaccine
 - Affecting age group most affected and likely to spread to other age groups
- Phase I: 18-22 year olds
Phase II: 18-25 year olds
Phase III: 25-46 year olds



What Worked

- Decreased period for isolation
- Spring Break messages
- Home-based isolation
- Emailing students
- Education on college campuses before mumps cases occurred
- Assessing campus vaccine coverage



Challenges

- Determining when and for how long students should remain out of class
 - Communication to professors
- Difficult for student clinics to assess whether a case was truly epi-linked
- Isolation phase was not followed
 - Once reduced was still not applied well
 - Duration of mild illness was up to 2 weeks



Lessons Learned

- Isolation is key if used early in the epidemic
- Further studies are needed to determine the transmissibility of mumps virus
- Voluntary quarantine is not feasible for epidemic situations with mild disease
- College-age population presents unique challenge for disease prevention



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